WETLAND MITIGATION SITE MONITORING REPORT
FAP 316 (IL 26), near Orangeville in Stephenson County, 2002

INTRODUCTION

This report details monitoring of the wetland mitigation site created to compensate for wetland loss and disturbance caused by the relocation of Illinois Route 26 near Orangeville in Stephenson County. The compensation site consists of approximately 3.4 ha (8.5 acres) of wetland creation (Site 1) and 3.3 ha (8.2 acres) of wetland enhancement (Site 2). The wetland creation is located north of the former West St. James Road, west of the Jane Addams bike trail (former Wisconsin and Calumet Railroad right-of-way), and east of the realigned Illinois Route 26 (legal location S/2, SW/4, Sect. 36, T 29 N, R 7 E). The wetland enhancement is located south of the former West St. James Road, along the east and west sides of Richland Creek, upstream and downstream from the bridge on relocated Illinois Route 26 (legal location E/2, NW/4, Sect. 1, T 28 N, R 7 E). Emergent wetland vegetation was planted at Site 1 on 28 July 2000, and a seeding mixture was planted at Site 2, and around the perimeter of Site 1, in late August 2000. On-site monitoring was conducted on 26 September 2000, 22 and 23 August 2001, and 12 and 13 August 2002.

This report discusses the goals, objectives, and performance criteria for the mitigation project, the methods used for monitoring the site, the monitoring results from August 2002, and a discussion and recommendations based on those results. Methods and results are discussed by performance criteria for each goal.

Goals, Objectives, and Performance Standards

Goals, objectives, and performance standards follow those specified in the wetland compensation plan that the IDOT Wetlands Unit developed for this site. Each goal should be attained by the end of the 5-year monitoring period. Goals, objectives, and performance criteria are listed below.

Project goal 1: The created and enhanced wetland communities should be jurisdictional wetlands as defined by current federal standards.

Objective: The created wetland should compensate for the loss of 1.82 ha (4.5 acres) of emergent wetland and 0.08 ha (0.2 acres) of farmed wetland at a 1.8:1 ratio (8.5 acres of compensation). The enhanced wetland should compensate for an additional 1.32 ha (3.25 acres) at a 2.5:1 ratio (8.1 acres of compensation), which may be required by the recent Draft of Wetlands Administrative Rules (IDOT Wetlands Unit, Wetland Compensation Plan).

Performance criteria:

a. Predominance of hydrophytic vegetation: More than 50% of the dominant plant species must be hydrophytic.

b. Presence of wetland hydrology: The area must be either permanently or periodically inundated at average depths less than 2 m (6.6 ft) or have soils that are saturated to the surface for at least 12.5% of the growing season.

c. Occurrence of hydric soils: Hydric soil characteristics should be present, or conditions favorable for hydric soil formation should persist at the site.

Project goal 2: The created wetland plant community should meet a standard for vegetation cover.

Objectives: An emergent marsh will be created, and a wet meadow will be enhanced, by planting native wetland vegetation.

Performance criterion: Planted vegetation should account for at least 50% of the ground cover at each of the sites.

METHODS

Project goal 1

a. Predominance of hydrophytic vegetation

The method for determining dominant vegetation at a wetland site is described in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and further explained in the *Federal Manual for Identifying and Delineating Jurisdictional Wetlands* (Federal Interagency Committee for Wetland Delineation 1989). The relative Importance Value, a combination of relative coverage and relative frequency, of each species was determined by quantitatively sampling vegetation at each site (see project goal 2, below). Species were then arranged by Importance Value in decreasing order, and Importance Values were sequentially summed, starting with the most prevalent species, until the total reached 50. Those species included in the summation were considered dominant species. Each of the dominant plant species was then assigned its wetland indicator status rating (Reed 1988). Any plant rated facultative or wetter (*i.e.*, FAC, FAC+, FACW, or OBL) is considered a hydrophyte. A predominance of vegetation in the wetland plant community exists if more than 50% of the dominant species present are hydrophytic.

b. Presence of wetland hydrology

In April 2001, Illinois State Geological Survey (ISGS) personnel installed nine soil-zone monitoring wells, three stage gauges, a rain gauge, a sonic water-level data logger, and an RDS water-level data logger (Weaver and Carr 2001). In 2002, ISGS personnel installed additional monitoring wells, stage gauges, and water-level data loggers and produced topographic maps of the site. Locations for these instruments can be found in the ISGS report *Orangeville Wetland Compensation Site* (Weaver and Carr 2002). Methods are further described in the ISGS document *Annual report for active IDOT wetland compensation and hydrologic monitoring sites* (Fucciolo et al. 2002).

c. Occurrence of hydric soils

The soil was sampled in order to monitor hydric soil development. Soil profile morphology, including horizon color, texture, and structure, was described at various points throughout the site. Additionally, the presence, type, size, and abundance of redoximorphic features were noted.

Hydric soils typically develop slowly, and characteristics may not be apparent during the first several years after project construction. In the absence of hydric soil indicators at the end of the five-year monitoring period, hydrologic data could be used as corroborative evidence that conditions favorable for hydric soil formation persist at the site.

Project goal 2

Vegetation at the wetland enhancement and created wetland was quantitatively sampled using 0.5-m x 0.5-m (0.25 m^2) quadrats placed every 30.5 m (100 ft) along transects. For the created marsh, the emergent zone was sampled separately from the higher elevation wet prairie border. Eight parallel transects placed every 30.5 m (100 ft) and running east to west were used to sample the emergent marsh zone, and a single transect running along the perimeter of the created wetland was used to sample the wet prairie border zone. Ten parallel transects placed every 30.5 m (100 ft) and running southeast to northwest were used to sample the wetland enhancement site. All plant species in each quadrat were recorded and each species was assigned a cover class (Table 1), an estimate of the amount of area within the sample quadrat that is covered by that species. Data from quadrats were used to calculate frequency (per cent of quadrats in which the species is present), relative frequency (frequency relative to other species), average cover per quadrat, relative cover, and Importance Value (average of relative frequency and relative cover) for each sampled species. Trees planted around the borders of both sites were censused to assess their survival.

Table 1: Cover classes used to estimate aerial cover by plant species in sample quadrats

Cover class	Range of aerial cover	Midpoint of range
r	<1%, solitary	0%
+	<1%, seldom	0%
1	1-5%	3%
2	5-25%	15%
3	25-50%	37.5%
4	50-75%	62.5%
5	75-95%	85%
6	95-100%	97.50%

Floristic quality assessment

The Floristic Quality Assessment (Taft et al. 1997) was applied to the plant community at each site to evaluate ecological integrity. The assessment methodology is used to identify natural areas and facilitate floristic comparisons among sites. This technique is part of the procedure for the long-term monitoring of natural areas and the monitoring of

restored or created wetlands (Swink and Wilhelm 1994). Plant species not native to Illinois are not included in the FQI. Each native plant species is assigned a coefficient of conservatism (*C*) ranging from 0 to 10. Lower numbers have been assigned to species that tend to be more tolerant of disturbance and higher numbers to species that are generally found in less disturbed natural areas. A mean coefficient value (m*C*v) is determined by summing the coefficients of conservatism (*C*) and dividing by the total number of native species (*N*). The Floristic Quality Index (FQI) is then determined by dividing the sum of the coefficients of conservatism by the square root of *N*. This calculation is done to incorporate numerical species diversity into the FQI value. Sites with FQI values less than 10 suggest that the area has been highly disturbed or is in an early successional stage. Sites with FQI values of 20 or more generally possess some evidence of natural character and may be considered environmental assets. Sites with values of 35 or more are considered to be of natural area quality.

RESULTS

Project goal 1

a. Predominance of hydrophytic vegetation

Dominant plant species for the created marsh (Site 1A), the wet prairie border (Site 1B) surrounding the marsh, and the wetland enhancement (Site 2) are shown in Tables 2, 3, and 4, respectively. At the created marsh and the wetland enhancement, greater than 50% of the dominant species are rated OBL, FACW or FAC, and therefore, the dominant vegetation is hydrophytic. However, at the wet prairie border of the created wetland, only 33% of the dominant species are rated OBL, FACW or FAC. Therefore, the wet prairie border does not support dominant hydrophytic vegetation.

Table 2. Dominant plant species by stratum and wetland indicator status for the created wetland

Dominant plant species	Stratum	Indicator status
1. *Bidens cernua*	herb	OBL
2. *Eleocharis obtusa*	herb	OBL
3. *Leersia oryzoides*	herb	OBL
4. *Phalaris arundinacea*	herb	FACW+
5. *Polygonum hydropiper*	herb	OBL

Table 3. Dominant plant species by stratum and wetland indicator status for the wet prairie border of the created wetland

Dominant plant species	Stratum	Indicator status
1. *Bromus inermis*	herb	UPL
2. *Phalaris arundinacea*	herb	FACW+
3. *Ratibita pinnata*	herb	UPL
4. *Rudbeckia hirta*	herb	FACU
5. *Rudbeckia subtomentosa*	herb	FACW
6. *Trifolium hybridum*	herb	FAC-

Table 4. Dominant plant species by stratum and wetland indicator status for the wetland enhancement

Dominant plant species	Stratum	Indicator status
1. *Agrostis alba*	herb	FACW
2. *Epilobium coloratum*	herb	OBL
3. *Leersia oryzoides*	herb	OBL
4. *Lolium perenne*	herb	FACU
5. *Phalaris arundinacea*	herb	FACW+
6. *Polygonum lapathifolium*	herb	FACW+
7. *Taraxacum officinale*	herb	FACU

b. Presence of wetland hydrology

Hydrologic data for the sites for September 2001 through September 2002 are presented in Appendix B (Weaver and Carr 2002). The entire 3.41 ha (8.44 acres) at Site 1, and an estimated 1.53 of 3.32 ha (3.78 of 8.20 acres) at Site 2 conclusively satisfied the wetland hydrology criterion during the monitoring period (Figs. 1-3).

c. Occurrence of hydric soils

Soils on both the wetland enhancement and the wetland creation were originally found to be disturbed. At both sites, soils were intentionally removed exposing a lower substratum. Since site construction, new pedogenic processes have taken place and soils are developing accordingly. Hydric features are developing throughout both sites.

The soils at the created marsh (Site 1A) are highly disturbed. This area may have been excavated as much as 1.5 to 1.8 m (5 to 6 ft). The soils are much sandier towards the creek inlet. The following is a description of a typical pedon within the created marsh.

Table 5. Description of the soils at the created marsh (Site 1A)

Depth (in)	Matrix Color	Concentrations	Depletions	Texture	Structure
0 – 4	10YR 2/1	7.5YR 3/4		Silt Loam	Granular
4 – 20	10YR 4/1	7.5YR 3/4 & 5YR 4/6		Clay	Massive
20 – 36	10G 4.5/0			Sandy Clay to Clay	Massive

The soils at the wet prairie border of the created wetland (Site 1B) are also disturbed. The soils here have not been excavated as deeply as the adjacent lower area. Although this area is slightly higher, the soil does show prominent hydric features. The following is a description of a typical pedon within the wet prairie border of the created marsh.

Table 6. Description of the soils at the border of the created marsh (Site 1B)

Depth (in)	Matrix Color	Concentrations	Depletions	Texture	Structure
0 – 2	10YR 2/1	5YR 3/4 & 10YR 5/6		Silt Loam	Granular
2 - 18	10YR 2/1	5YR 3/4 & 10YR 5/6		Silty Clay Loam	Sub-Blocky
18 – 45	10YR 5/2	7.5YR 5/8	10YR 6/1	Clay to Sandy Clay	Massive

At the wetland enhancement (Site 2) the soils were excavated perhaps only 0.3 to 0.45 m (2 to 2.5 ft). No other type of anthropogenic disturbance is evident within the profile. A buried A horizon was found at 0.6 m (23 in). Even though the soil is disturbed, hydric soil indicators are vividly present. A typical pedon is described below.

Table 7. Description of the soils at the enhanced wetland (Site 2)

Depth (in)	Matrix Color	Concentrations	Depletions	Texture	Structure
0 – 3	10YR 3/1			Silt Loam	Granular
3 – 16	10YR 3/1	7.5YR 2.5/3 & 10YR 3/4	2.5Y 4.5/2 & N 2.5/0	Clay Loam	Sub-Blocky
16 – 23	10YR 3/1	10YR 3/4	2.5Y 4.5/2	Clay Loam	Massive
23 – 26	N 2.5/0			Silty Clay Loam	Granular
26 – 45	N 2.5/0			Silty Clay Loam	Sub-Blocky

Project goal 2

The results of quantitative vegetation sampling for the emergent marsh zone of the created wetland, the wet prairie border of the created wetland, and the wetland enhancement are presented in Appendix C. In the emergent marsh zone of the created wetland seven planted wetland species were present in sampled quadrats. These species, combined, accounted for approximately 24.0% of the plant cover at the site. This is a decrease from 47.7% coverage in 2001. *Alisma plantago-aquatica* and *Eleocharis obtusa* were the most frequently encountered planted species at the site and accounted for 9.1% and 9.3%, respectively, of the plant cover at the site. The remaining five planted species account for a very small amount of the sampled plant cover for the entire site, but several species appeared to be spreading from where originally planted. Large areas of the site were occupied by open water (average cover per quadrat 7.3%).

Thirteen planted species were present in quadrats in the wet prairie border of the created wetland. Together these thirteen species account for 49.9% of the cover at the site. However, seven of these species are not considered hydrophytic. Planted species have increased in frequency, diversity and relative cover since 2001. Only three planted species were observed in sampled quadrats in 2001, and the total coverage by planted species in 2001 was 25.1%.

Five planted wetland species were present in quadrats in the wetland enhancement: *Juncus torreyi, Carex vulpinoidea, Glyceria striata, Scirpus atrovirens*, and *Leersia oryzoides*. Although total cover by planted wetland species has increased slightly since 2001, planted wetland species still account for only 10.3% of the cover at the site. The remaining 89.7% is by volunteer species and *Lolium perenne*, which was planted as a cover crop and still persists at the site.

All planted saplings on the southeast border of the wetland enhancement site have survived through the second growing season. Five saplings (4.8% of those planted at the site) along the border of the created wetland did not survive the first growing season, but

no additional saplings have died during the second season. Surviving saplings are listed by species in Table 8.

Table 8: Surviving saplings at the wetland enhancement and created marsh

Common name	Botanical name	Number at enhancement	Number at created marsh
Birch	*Betula* sp.	0	2
River birch	*Betula nigra*	0	8
Green ash	*Fraxinus pennsylvanica*	4	0
Eastern cottonwood	*Populus deltoides*	10	20
Swamp white oak	*Quercus bicolor*	10	50
Burr oak	*Quercus macrocarpa*	0	20

Photographs illustrating vegetation at both sites are presented in Appendix D.

Floristic Quality Assessment

Mean coefficient of conservatism and FQI values were calculated for each site from the species lists included in Appendix A. For each site, mCv and FQI values were calculated using only species that became established on the site naturally (volunteer species), and then recalculated to include planted species (Table 9).

Table 9: Mean coefficient of conservatism (mCv) and Floristic Quality Index (FQI) values for wetland creation and enhancement sites

	Volunteer species only		Volunteer plus planted species	
Site	mCv	FQI	mCv	FQI
1A. Created marsh	2.3	16.6	2.7	22.3
1B. Wet prairie border	1.8	9.9	3.1	24.1
2. Wetland enhancement	2.1	16.9	2.3	19.6

DISCUSSION

After two years, these sites show good progress towards wetland establishment. There is a fairly high probability that the sites will comply with project goals, objectives, and performance standards by the end of the monitoring period. However, the areal extent of dominant wetland vegetation at Site 1 has decreased since the 2001 monitoring year. In 2002, the wet prairie border of the created marsh (Site 1B) did not support dominant hydrophytic vegetation. This is due to the establishment of several non-hydrophytic species that were planted at the site or along Illinois Route 26. In addition, the 2002 areal extent of wetland hydrology at Site 2 (Weaver and Carr 2002) has decreased compared to the previous monitoring year (Figs. 1-3, Appendix B). Further monitoring of the sites will be necessary in order to determine whether these sites meet jurisdictional wetland criteria.

Soils at both sites were seriously disturbed during the wetland creation process. Even so, soils at both the wetland enhancement and the created wetland have developed hydric soil indicators and meet the jurisdictional hydric soil criterion.

At the wetland enhancement site, the tributary to Richland Creek was intentionally diverted from its original channel and now flows southwest along the southern edge of the site. The new channel is a shallow, braided stream. However, the tributary may revert to its old, deeply cut channel, which flows west into Richland Creek. This would shorten water retention time on the site, altering site hydrology and wetland function.

Planted wetland vegetation is not yet well established at either site. Coverage by planted species at Site 1A has decreased from the previous year, due to a decrease in coverage by *Alisma plantago-aquatica* and *Eleocharis obtusa*. However, most of the initial establishment by these two species was likely due to natural establishment rather than intentional planting (Matthews et al. 2001). A decrease in cover by these species over time is to be expected as they become crowded out by more competitive perennial species. Several of the other species planted at the created marsh persist, and many appear to be spreading from where they were originally planted. However, some of the deepwater emergent plants such as *Nuphar luteum*, *Nymphaea tuberosa*, and *Pontederia cordata* that were planted in 2000 were not observed at the site in 2001 or 2002. Coverage by planted species in the wet prairie border of the created marsh (Site 1B) has increased to almost 50%. However, many of the planted species present in the wet prairie border in 2002 are not considered hydrophytic. Planted vegetation at the wetland enhancement (Site 2) is not well established. Invasion by aggressive exotic species at this site may be a barrier to present and future establishment of planted species.

Floristic Quality Index values at the created marsh, the wet prairie border of the marsh, and the wetland enhancement sites, when planted species are included, approach those indicative of high natural quality. The high FQI value at the wet prairie border of the marsh is due to the establishment of several planted prairie species in 2002. At the created marsh and the wetland enhancement the high FQI values are largely the result of a high diversity of volunteer species. If planted vegetation becomes established, and the disturbance-adapted species are replaced by more conservative species, the mCv and FQI values should increase. However, *Phalaris arundinacea* (reed canary grass), an aggressive invasive grass, has become a dominant species at both sites and is abundant in much of the surrounding area. Encroachment by *P. arundinacea* may lead to a decrease in species diversity and FQI, and should be considered a threat to the success of these wetlands. Herbicide control of this species should be a management priority.

Literature Cited

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APPENDIX A: WETLAND DETERMINATION FORMS

ROUTINE ON-SITE WETLAND DETERMINATION

Site 1A (page 1 of 6)

Field Investigators: Matthews, Kurylo, Tessene, and Feist
Date: 13 August 2002
Project Name: FAP 316
State: Illinois **County:** Stephenson **Applicant:** IDOT District 2
Site Name: Created marsh
Legal Description: S/2, SW/4, Sect. 36, T 29 N, R 7 E
Location: This created marsh is located north of the former West St. James Road, west of the Jane Addams bike trail (former Wisconsin and Calumet Railroad right-of-way), and east of the realigned Illinois Route 26.

Do normal environmental conditions exist at this site? Yes: X No:
Has the vegetation, soils, or hydrology been significantly disturbed? Yes: X No:
Comment: The site has been recently excavated, affecting soils and hydrology.

VEGETATION

Dominant Plant Species	Indicator Status	Stratum
1. *Bidens cernua*	OBL	herb
2. *Eleocharis obtusa*	OBL	herb
3. *Leersia oryzoides*	OBL	herb
4. *Phalaris arundinacea*	FACW+	herb
5. *Polygonum hydropiper*	OBL	herb

Percentage of dominant species that are OBL, FACW, FAC+, or FAC: 100%

Hydrophytic vegetation: Yes: X No:
Rationale: More than 50% of the dominants are OBL, FACW, FAC+, or FAC.

SOILS

Series and phase: Mapped as Dorchester silt loam, revised to Typic Udorthent.

On county hydric soils list?	Yes:	No: X	
Is the soil a histosol?	Yes:	No: X	
Histic epipedon present?	Yes:	No: X	
Redox Concentrations?	Yes: X	No:	Color: 5YR 4/6 and 7.5YR 3/4
Redox Depletions?	Yes:	No: X	

Matrix color: 10YR 2/1 over 10YR 4/1
Other indicators: Soils are in level to depressional area.
Hydric soils? Yes: X No:
Rationale: This is an excavated site where soils were stripped away exposing a lower substratum. While some of the colors may still be relict, there has been substantial development of prominent hydric features. This soil has a low chroma matrix and iron masses. The F3 indicator from NRCS is also met by this soil.

ROUTINE ON-SITE WETLAND DETERMINATION

Site 1A (page 2 of 6)

Field Investigators: Matthews, Kurylo, Tessene, and Feist
Date: 13 August 2002
Project Name: FAP 316
State: Illinois **County:** Stephenson **Applicant:** IDOT District 2
Site Name: Created marsh
Legal Description: S/2, SW/4, Sect. 36, T 29 N, R 7 E
Location: This created marsh is located north of the former West St. James Road, west of the Jane Addams bike trail (former Wisconsin and Calumet Railroad right-of-way), and east of the realigned Illinois Route 26.

HYDROLOGY

Inundated: Yes: X(parts) No: Depth of standing water: 0 to 0.3 m (0 to 12 in)
Depth to saturated soil: Varies from surface to >0.9 m (36 in)
Overview of hydrological flow through the system: This site receives water through precipitation and sheet flow from surrounding higher ground. Water leaves the site via evapotranspiration and stream flow via a culvert at the south end.
Size of Watershed: <100 km^2 (38.6 mi^2)
Other field evidence observed: Water-borne sediment deposits on vegetation

Wetland hydrology: Yes: X No:
Rationale: This site is located in an excavated depression and holds water for a very long time during the growing season. Therefore, it is inundated or saturated for a sufficient duration to satisfy the wetland hydrology criterion.

DETERMINATION AND RATIONALE:

Is the site a wetland? Yes: X No:
Rationale: This site supports dominant hydrophytic vegetation, hydric soils, and wetland hydrology. We determined that this site is a wetland.

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ROUTINE ON-SITE WETLAND DETERMINATION

Site 1A (page 3 of 6)

Field Investigators: Matthews, Kurylo, Tessene, and Feist
Date: 13 August 2002
Project Name: FAP 316
State: Illinois **County:** Stephenson **Applicant:** IDOT District 2
Site Name: Created marsh
Legal Description: S/2, SW/4, Sect. 36, T 29 N, R 7 E
Location: This created marsh is located north of the former West St. James Road, west of the Jane Addams bike trail (former Wisconsin and Calumet Railroad right-of-way), and east of the realigned Illinois Route 26.

SPECIES LIST

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
Acalypha rhomboidea	three-seeded mercury	herb	FACU	0
Acer negundo	box elder	herb	FACW-	1
Agrostis alba	red top	herb	FACW	0
Alisma plantago-aquatica	broad-leaf water-plantain	herb	OBL	2
Amaranthus tuberculatus	tall waterhemp	herb	OBL	1
Ambrosia artemisiifolia	common ragweed	herb	FACU	0
Ambrosia trifida	giant ragweed	herb	FAC+	0
Ammannia coccinea	long-leaved ammannia	herb	OBL	5
Anthemis cotula	dog fennel	herb	FACU	*
Asclepias incarnata	swamp milkweed	herb	OBL	4
Bidens cernua	nodding beggar's ticks	herb	OBL	2
Bidens frondosa	common beggar's ticks	herb	FACW	1
Bidens tripartita	beggar's ticks	herb	OBL	2
Bidens vulgata	tall beggar's ticks	herb	FACW	0
Carex sp.	sedge	herb	-----	--
Carex vulpinoidea	fox sedge	herb	OBL	3
Chamaesyce supina	milk spurge	herb	UPL	0
Cirsium arvense	Canada thistle	herb	FACU	*
Cirsium vulgare	bull thistle	herb	FACU-	*
Conyza canadensis	horseweed	herb	FAC-	0
Cyperus esculentus	yellow nut-sedge	herb	FACW	0
Cyperus strigosus	straw-colored flatsedge	herb	FACW	0
Echinochloa muricata	barnyard grass	herb	OBL	0
Echinochloa walteri	salt-marsh cockspur grass	herb	OBL	5
Eleocharis acicularis	needle spike rush	herb	OBL	3
Eleocharis erythropoda	spike rush	herb	OBL	3
Eleocharis obtusa	blunt spike rush	herb	OBL	2
Epilobium coloratum	cinnamon willow herb	herb	OBL	3
Erigeron annuus	annual fleabane	herb	FAC-	1

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ROUTINE ON-SITE WETLAND DETERMINATION
Site 1A (page 4 of 6)

Field Investigators: Matthews, Kurylo, Tessene, and Feist
Date: 13 August 2002
Project Name: FAP 316
State: Illinois **County:** Stephenson **Applicant:** IDOT District 2
Site Name: Created marsh
Legal Description: S/2, SW/4, Sect. 36, T 29 N, R 7 E
Location: This created marsh is located north of the former West St. James Road, west of the Jane Addams bike trail (former Wisconsin and Calumet Railroad right-of-way), and east of the realigned Illinois Route 26.

SPECIES LIST (continued)

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
Erigeron pulchellus	robin's plantain	herb	FACU	5
Eupatorium perfoliatum	common boneset	herb	FACW+	4
Glyceria grandis	American manna grass	herb	OBL	10
Glyceria striata	fowl manna grass	herb	OBL	4
Hordeum jubatum	squirrel-tail	herb	FAC+	*
Impatiens capensis	jewelweed	herb	FACW	2
Juncus dudleyi	Dudley's rush	herb	FAC	4
Juncus effusus solutus	common rush	herb	OBL	4
Juncus torreyi	Torrey's rush	herb	FACW	3
Leersia oryzoides	rice cutgrass	herb	OBL	3
Lemna minor	common duckweed	herb	OBL	3
Lindernia dubia	false pimpernel	herb	OBL	5
Lycopus americanus	common water horehound	herb	OBL	3
Myosoton aquaticum	giant chickweed	herb	FAC+	*
Panicum virgatum	prairie switchgrass	herb	FAC+	4
Penthorum sedoides	ditch stonecrop	herb	OBL	2
Phalaris arundinacea	reed canary grass	herb	FACW+	*
Polygonum hydropiper	common smartweed	herb	OBL	*
Polygonum lapathifolium	curttop lady's thumb	herb	FACW+	0
Polygonum pensylvanicum	giant smartweed	herb	FACW+	1
Polygonum persicaria	spotted lady's thumb	herb	FACW	*
Populus deltoides	eastern cottonwood	herb	FAC+	2
Potentilla norvegica	rough cinquefoil	herb	FAC	0
Rudbeckia hirta	black-eyed Susan	herb	FACU	2
Rumex crispus	curly dock	herb	FAC+	*
Salix amygdaloides	peach-leaved willow	shrub, herb	FACW	4
Salix exigua	sandbar willow	shrub, herb	OBL	1
Salix nigra	black willow	shrub, herb	OBL	3
Setaria glauca	pigeon grass	herb	FAC	*

(continued on next page)

ROUTINE ON-SITE WETLAND DETERMINATION

Site 1A (page 5 of 6)

Field Investigators: Matthews, Kurylo, Tessene, and Feist
Date: 13 August 2002
Project Name: FAP 316
State: Illinois **County:** Stephenson **Applicant:** IDOT District 2
Site Name: Created marsh
Legal Description: S/2, SW/4, Sect. 36, T 29 N, R 7 E
Location: This created marsh is located north of the former West St. James Road, west of the Jane Addams bike trail (former Wisconsin and Calumet Railroad right-of-way), and east of the realigned Illinois Route 26.

SPECIES LIST (continued)

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
Sium suave	water parsnip	herb	OBL	5
Solidago canadensis	Canada goldenrod	herb	FACU	1
Solidago gigantea	late goldenrod	herb	FACW	3
Taraxacum officinale	common dandelion	herb	FACU	*
Trifolium hybridum	alsike clover	herb	FAC-	*
Trifolium repens	white clover	herb	FACU+	*
Typha latifolia	cattail	herb	OBL	1
Verbena hastata	blue vervain	herb	FACW+	3

† Coefficient of Conservatism (Taft et al. 1997)
* Non-native species

$mCv = \sum C/N = 120/52 = 2.3$
$FQI = \sum C/\sqrt{N} = 120/\sqrt{52} = 16.6$

ROUTINE ON-SITE WETLAND DETERMINATION

Site 1A (page 6 of 6)

Field Investigators: Matthews, Kurylo, Tessene, and Feist
Date: 13 August 2002
Project Name: FAP 316
State: Illinois **County:** Stephenson **Applicant:** IDOT District 2
Site Name: Created marsh
Legal Description: S/2, SW/4, Sect. 36, T 29 N, R 7 E
Location: This created marsh is located north of the former West St. James Road, west of the Jane Addams bike trail (former Wisconsin and Calumet Railroad right-of-way), and east of the realigned Illinois Route 26.

PLANTED SPECIES

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
Alisma plantago-aquatica	broad-leaf water-plantain	herb	OBL	2
Calamagrostis canadensis	bluejoint grass	herb	OBL	3
Caltha palustris	cowslip	herb	OBL	7
Carex lacustris	river sedge	herb	OBL	6
Carex stricta	tussock sedge	herb	OBL	5
Eleocharis obtusa	blunt spike rush	herb	OBL	2
Iris shrevei	southern blue flag	herb	OBL	5
Polygonum amphibium	water smartweed	herb	OBL	3
Sagittaria latifolia	arrowhead	herb	OBL	4
Scirpus americanus	chairmaker's rush	herb	OBL	3
Scirpus atrovirens	dark green bulrush	herb	OBL	4
Scirpus cyperinus	wool grass	herb	OBL	5
Scirpus fluviatilis	river bulrush	herb	OBL	3
Scirpus tabernaemontanii	great bulrush	herb	OBL	4
Sparganium eurycarpum	burreed	herb	OBL	5
Spartina pectinata	freshwater cord grass	herb	FACW+	4

† Coefficient of Conservatism (Taft et al. 1997)
* Non-native species

$mCv = \sum C/N = 181/66 = 2.7$**
$FQI = \sum C/\sqrt{N} = 181/\sqrt{66} = 22.3$**

**These calculations include the complete species list above, as well as the planted species.

ROUTINE ON-SITE WETLAND DETERMINATION
Site 1B (page 1 of 6)

Field Investigators: Matthews, Kurylo, Tessene, and Feist
Date: 13 August 2002
Project Name: FAP 316
State: Illinois **County:** Stephenson **Applicant:** IDOT District 2
Site Name: Wet prairie border of created marsh
Legal Description: S/2, SW/4, Sect. 36, T 29 N, R 7 E
Location: This created wetland is located north of the former West St. James Road, west of the Jane Addams bike trail (former Wisconsin and Calumet Railroad right-of-way), and east of the realigned Illinois Route 26. It borders site 1A, the created marsh.

Do normal environmental conditions exist at this site? Yes: X No:
Has the vegetation, soils, or hydrology been significantly disturbed? Yes: X No:
Comment: The site has been recently excavated, affecting soils and hydrology.

VEGETATION

Dominant Plant Species	Indicator Status	Stratum
1. *Bromus inermis*	UPL	herb
2. *Phalaris arundinacea*	FACW+	herb
3. *Ratibida pinnata*	UPL	herb
4. *Rudbeckia hirta*	FACU	herb
5. *Rudbeckia subtomentosa*	FACW	herb
6. *Trifolium hybridum*	FAC-	herb

Percentage of dominant species that are OBL, FACW, FAC+, or FAC: 33%

Hydrophytic vegetation: Yes: No: X
Rationale: Less than 50% of the dominants are OBL, FACW, FAC+, or FAC.

SOILS
Series and phase: Mapped as Dorchester silt loam, revised to Typic Udorthent.
On county hydric soils list? Yes: No: X
Is the soil a histosol? Yes: No: X
Histic epipedon present? Yes: No: X
Redox Concentrations? Yes: X No: Color: 10YR 5/6 and 5YR 3/4
Redox Depletions? Yes: No: X
Matrix color: 10YR 2/1 over 10YR 5/2
Other indicators: None.
Hydric soils? Yes: X No:
Rationale: This is an excavated site where soils were stripped away exposing a lower substratum. While the colors may be relict they are developing prominent hydric features. This soil has a low chroma matrix and iron masses. The NRCS hydric soil indicator of F3 is also met.

ROUTINE ON-SITE WETLAND DETERMINATION

Site 1B (page 2 of 6)

Field Investigators: Matthews, Kurylo, Tessene, and Feist
Date: 13 August 2002
Project Name: FAP 316
State: Illinois **County:** Stephenson **Applicant:** IDOT District 2
Site Name: Wet prairie border of created marsh
Legal Description: S/2, SW/4, Sect. 36, T 29 N, R 7 E
Location: This created wetland is located north of the former West St. James Road, west of the Jane Addams bike trail (former Wisconsin and Calumet Railroad right-of-way), and east of the realigned Illinois Route 26. It borders site 1A, the created marsh.

HYDROLOGY

Inundated: Yes: No: X Depth of standing water: N/A
Depth to saturated soil: >0.9 m (36 in)
Overview of hydrological flow through the system: This site receives water through precipitation and sheet flow from surrounding higher ground. Water leaves the site via evapotranspiration and stream flow via a culvert at the south end.
Size of Watershed: <100 km^2 (38.6 mi^2)
Other field evidence observed: Water-borne sediment deposits on vegetation

Wetland hydrology: Yes: X No:
Rationale: This site is in an excavated depression that remains inundated or saturated for a sufficient duration to satisfy the wetland hydrology criterion.

DETERMINATION AND RATIONALE:

Is the site a wetland? Yes: No: Undetermined: X
Rationale: Although this site has hydric soils and wetland hydrology, it lacked dominant hydrophytic vegetation during the 2002 monitoring period. This site supported dominant hydrophytic vegetation in 2001. The site was disturbed during site construction and the vegetation is not yet fully established. Further monitoring of the site will be necessary to determine whether the site will develop dominant hydrophytic vegetation.

Determined by: Jeff Matthews, Paul Tessene, and Mary Ann Feist
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ROUTINE ON-SITE WETLAND DETERMINATION
Site 1B (page 3 of 6)

Field Investigators: Matthews, Kurylo, Tessene, and Feist
Date: 13 August 2002
Project Name: FAP 316
State: Illinois **County:** Stephenson **Applicant:** IDOT District 2
Site Name: Wet prairie border of created marsh
Legal Description: S/2, SW/4, Sect. 36, T 29 N, R 7 E
Location: This created wetland is located north of the former West St. James Road, west of the Jane Addams bike trail (former Wisconsin and Calumet Railroad right-of-way), and east of the realigned Illinois Route 26. It borders site 1A, the created marsh.

SPECIES LIST

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
Acalypha rhomboidea	three-seeded mercury	herb	FACU	0
Acer negundo	box elder	herb	FACW-	1
Acer saccharinum	silver maple	tree	FACW	1
Agrostis alba	red top	herb	FACW	0
Ambrosia artemisiifolia	common ragweed	herb	FACU	0
Ambrosia trifida	giant ragweed	herb	FAC+	0
Aster novae-angliae	New England aster	herb	FACW	4
Aster pilosus	hairy aster	herb	FACU+	0
Bidens frondosa	common beggar's ticks	herb	FACW	1
Bidens tripartita	beggar's ticks	herb	OBL	2
Bidens vulgata	tall beggar's ticks	herb	FACW	0
Bromus inermis	awnless brome grass	herb	UPL	*
Bromus japonicus	Japanese brome	herb	FACU	*
Carduus acanthoides	acanthus bristle thistle	herb	UPL	*
Cirsium arvense	Canada thistle	herb	FACU	*
Cirsium vulgare	bull thistle	herb	FACU-	*
Cyperus strigosus	straw-colored flatsedge	herb	FACW	0
Daucus carota	Queen Anne's lace	herb	UPL	*
Echinochloa muricata	barnyard grass	herb	OBL	0
Eleocharis erythropoda	spike rush	herb	OBL	3
Elymus repens	quack grass	herb	FACU	*
Epilobium coloratum	cinnamon willow herb	herb	OBL	3
Erigeron annuus	annual fleabane	herb	FAC-	1
Eupatorium perfoliatum	common boneset	herb	FACW+	4
Helianthus annuus	common sunflower	herb	FAC-	*
Lactuca serriola	prickly lettuce	herb	FAC	*
Lycopus americanus	common water horehound	herb	OBL	3

(continued on next page)

ROUTINE ON-SITE WETLAND DETERMINATION

Site 1B (page 4 of 6)

Field Investigators: Matthews, Kurylo, Tessene, and Feist
Date: 13 August 2002
Project Name: FAP 316
State: Illinois **County:** Stephenson **Applicant:** IDOT District 2
Site Name: Wet prairie border of created marsh
Legal Description: S/2, SW/4, Sect. 36, T 29 N, R 7 E
Location: This created wetland is located north of the former West St. James Road, west of the Jane Addams bike trail (former Wisconsin and Calumet Railroad right-of-way), and east of the realigned Illinois Route 26. It borders site 1A, the created marsh.

SPECIES LIST (continued)

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
Melilotus alba	white sweet clover	herb	FACU	*
Melilotus officinalis	yellow sweet clover	herb	FACU	*
Oenothera biennis	evening primrose	herb	FACU	1
Penthorum sedoides	ditch stonecrop	herb	OBL	2
Phalaris arundinacea	reed canary grass	herb	FACW+	*
Phleum pratense	timothy	herb	FACU	*
Polygonum amphibium	water smartweed	herb	OBL	3
Polygonum hydropiper	common smartweed	herb	OBL	*
Polygonum persicaria	spotted lady's thumb	herb	FACW	*
Populus deltoides	eastern cottonwood	herb	FAC+	2
Potentilla norvegica	rough cinquefoil	herb	FAC	0
Rumex crispus	curly dock	herb	FAC+	*
Salix amygdaloides	peach-leaved willow	shrub	FACW	4
Salix exigua	sandbar willow	shrub	OBL	1
Salix nigra	black willow	shrub	OBL	3
Scirpus tabernaemontanii	great bulrush	herb	OBL	4
Solidago canadensis	Canada goldenrod	herb	FACU	1
Solidago gigantea	late goldenrod	herb	FACW	3
Sonchus asper	prickly sowthistle	herb	FAC	*
Taraxacum officinale	common dandelion	herb	FACU	*
Trifolium hybridum	alsike clover	herb	FAC-	*
Trifolium pratense	red clover	herb	FACU+	*
Trifolium repens	white clover	herb	FACU+	*
Ulmus rubra	slippery elm	herb	FAC	3
Verbascum thapsus	woolly mullein	herb	UPL	*
Vernonia fasciculata	common ironweed	herb	FACW	5

† Coefficient of Conservatism (Taft et al. 1997)
* Non-native species

$mCv = \sum C/N = 55/31 = 1.8$
$FQI = \sum C/\sqrt{N} = 55/\sqrt{31} = 9.9$

ROUTINE ON-SITE WETLAND DETERMINATION
Site 1B (page 5 of 6)

Field Investigators: Matthews, Kurylo, Tessene, and Feist
Date: 13 August 2002
Project Name: FAP 316
State: Illinois **County:** Stephenson **Applicant:** IDOT District 2
Site Name: Wet prairie border of created marsh
Legal Description: S/2, SW/4, Sect. 36, T 29 N, R 7 E
Location: This created wetland is located north of the former West St. James Road, west of the Jane Addams bike trail (former Wisconsin and Calumet Railroad right-of-way), and east of the realigned Illinois Route 26. It borders site 1A, the created marsh.

PLANTED SPECIES

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
Asclepias incarnata	swamp milkweed	herb	OBL	4
Aster laevis	smooth aster	herb	UPL	8
Betula nigra	river birch	sapling	FACW	4
Betula sp.	birch	sapling	-----	*
Bidens cernua	nodding beggar's ticks	herb	OBL	2
Carex vulpinoidea	fox sedge	herb	OBL	3
Coreopsis tinctoria	golden coreopsis	herb	FAC-	*
Eleocharis obtusa	blunt spike rush	herb	OBL	2
Elymus canadensis	Canada wild rye	herb	FAC-	4
Eryngium yuccifolium	rattlesnake master	herb	FAC+	7
Eupatorium maculatum	spotted Joe-Pye weed	herb	OBL	5
Helenium autumnale	autumn sneezeweed	herb	FACW+	3
Helianthus mollis	ashy sunflower	herb	UPL	7
Juncus torreyi	Torrey's rush	herb	FACW	3
Liatris aspera	rough blazing star	herb	UPL	7
Liatris pycnostachya	button snakeroot	herb	FAC-	6
Lobelia siphilitica	blue cardinal-flower	herb	FACW+	4
Lolium perenne	crested rye grass	herb	FACU	*
Monarda punctata	horsemint	herb	UPL	5
Panicum virgatum	prairie switchgrass	herb	FAC+	4
Parthenium integrifolium	wild quinine	herb	UPL	8
Populus deltoides	eastern cottonwood	sapling	FAC+	2
Quercus bicolor	swamp white oak	sapling	FACW+	7
Quercus macrocarpa	burr oak	sapling	FAC-	5
Ratibida pinnata	drooping coneflower	herb	UPL	4
Rudbeckia hirta	black-eyed Susan	herb	FACU	2
Rudbeckia subtomentosa	fragrant coneflower	herb	FACW	5
Scirpus atrovirens	dark green bulrush	herb	OBL	4

(continued on next page)

ROUTINE ON-SITE WETLAND DETERMINATION
Site 1B (page 6 of 6)

Field Investigators: Matthews, Kurylo, Tessene, and Feist
Date: 13 August 2002
Project Name: FAP 316
State: Illinois **County:** Stephenson **Applicant:** IDOT District 2
Site Name: Wet prairie border of created marsh
Legal Description: S/2, SW/4, Sect. 36, T 29 N, R 7 E
Location: This created wetland is located north of the former West St. James Road, west of the Jane Addams bike trail (former Wisconsin and Calumet Railroad right-of-way), and east of the realigned Illinois Route 26. It borders site 1A, the created marsh.

PLANTED SPECIES (continued)

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
Silphium integrifolium	wholeleaf rosinweed	herb	UPL	5
Silphium perfoliatum	cup plant	herb	FACW-	4
Solidago rigida	rigid goldenrod	herb	FACU-	4
Spartina pectinata	freshwater cord grass	herb	FACW+	4

† Coefficient of Conservatism (Taft et al. 1997)
* Non-native species

$mCv = \sum C/N = 185/59 = 3.1$**
$FQI = \sum C/\sqrt{N} = 185/\sqrt{59} = 24.1$**

**These calculations include the complete species list above, as well as the planted species.

ROUTINE ON-SITE WETLAND DETERMINATION

Site 2 (page 1 of 7)

Field Investigators: Matthews, Kurylo, Tessene, and Feist
Date: 12 August 2002
Project Name: FAP 316
State: Illinois **County:** Stephenson **Applicant:** IDOT District 2
Site Name: Wetland enhancement
Legal Description: E/2, NW/4, Sect. 1, T 28 N, R 7 E
Location: This wetland enhancement is located south of the former West St. James Road, along the east and west sides of Richland Creek, upstream and downstream from the bridge on relocated Illinois Route 26.

Do normal environmental conditions exist at this site? Yes: X No:
Has the vegetation, soils, or hydrology been significantly disturbed? Yes: X No:
Comment: The site has been excavated recently, affecting soils and hydrology.

VEGETATION

Dominant Plant Species	Indicator Status	Stratum
1. *Agrostis alba*	FACW	herb
2. *Epilobium coloratum*	OBL	herb
3. *Leersia oryzoides*	OBL	herb
4. *Lolium perenne*	UPL	herb
5. *Phalaris arundinacea*	FACW+	herb
6. *Polygonum lapathifolium*	FACW+	herb
7. *Taraxacum officinale*	FACU	herb

Percentage of dominant species that are OBL, FACW, FAC+, or FAC: 71%

Hydrophytic vegetation: Yes: X No:
Rationale: More than 50% of the dominants are OBL, FACW, FAC+, or FAC.

SOILS

Series and phase: Mapped as Dorchester silt loam, revised to Typic Udorthent.

On county hydric soils list?	Yes:	No: X	
Is the soil a histosol?	Yes:	No: X	
Histic epipedon present?	Yes:	No: X	
Redox Concentrations?	Yes: X	No:	Color: 10YR 3/4, 7.5YR 2.5/3
Redox Depletions?	Yes: X	No:	Color: 2.5Y 4.5/2

Matrix color: 10YR 3/1 over N 2.5/0
Other indicators: A tributary to Richland Creek occupies a new meandering channel over part of the site.
Hydric soils? Yes: X No:
Rationale: This is an excavated site where soils were stripped away exposing a lower substratum. Some of the colors observed are remnants of the old soil, but the soil has developed hydric indicators. Therefore this is a hydric soil. This soil also meets the F3 hydric soil indicator from NRCS.

ROUTINE ON-SITE WETLAND DETERMINATION

Site 2 (page 2 of 7)

Field Investigators: Matthews, Kurylo, Tessene, and Feist
Date: 12 August 2002
Project Name: FAP 316
State: Illinois **County:** Stephenson **Applicant:** IDOT District 2
Site Name: Wetland enhancement
Legal Description: E/2, NW/4, Sect. 1, T 28 N, R 7 E
Location: This wetland enhancement is located south of the former West St. James Road, along the east and west sides of Richland Creek, upstream and downstream from the bridge on relocated Illinois Route 26.

HYDROLOGY

Inundated: Yes: X(parts) No: Depth of standing water: 3 to 10 cm (1 to 4 in)
Depth to saturated soil: Surface to 0.6 m (24 in)
Overview of hydrological flow through the system: This site receives water through precipitation, sheet flow from surrounding higher ground, and occasional overflow from Richland Creek and a tributary. Water leaves the site via evapotranspiration and sheet flow into Richland Creek and a tributary.
Size of Watershed: <100 km^2 (38.6 mi^2)
Other field evidence observed: Water-borne sediment deposits on vegetation

Wetland hydrology: Yes: No: Undetermined: X
Rationale: This site occupies an excavated area along Richland Creek and is occasionally inundated. However, according to a report by ISGS personnel (Weaver and Carr 2002) only 1.53 ha (3.78 ac) of the site is inundated or saturated for a sufficient duration to satisfy the wetland hydrology criterion. In constrast, in 2001 3.28 ha (8.10 ac) satisfied the wetland hydrology criterion (Weaver and Carr 2001).

DETERMINATION AND RATIONALE:

Is the site a wetland? Yes: No: Undetermined: X
Rationale: Although this site supports hydrophytic vegetation and hydric soils, a large portion of it lacks wetland hydrology. In 2001 a much larger portion of the site satisfied the wetland hydrology criterion. Further monitoring will be necessary to determine whether wetland hydrology has been established at this site.

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ROUTINE ON-SITE WETLAND DETERMINATION
Site 2 (page 3 of 7)

Field Investigators: Matthews, Kurylo, Tessene, and Feist
Date: 12 August 2002
Project Name: FAP 316
State: Illinois **County:** Stephenson **Applicant:** IDOT District 2
Site Name: Wetland enhancement
Legal Description: E/2, NW/4, Sect. 1, T 28 N, R 7 E
Location: This wetland enhancement is located south of the former West St. James Road, along the east and west sides of Richland Creek, upstream and downstream from the bridge on relocated Illinois Route 26.

SPECIES LIST

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
Abutilon theophrasti	velvet-leaf	herb	FACU-	*
Acalypha rhomboidea	three-seeded mercury	herb	FACU	0
Acer negundo	box elder	herb	FACW-	1
Acer saccharinum	silver maple	herb	FACW	1
Agrostis alba	red top	herb	FACW	0
Alisma plantago-aquatica	broad-leaf water-plantain	herb	OBL	2
Amaranthus tuberculatus	tall waterhemp	herb	OBL	1
Ambrosia artemisiifolia	common ragweed	herb	FACU	0
Ambrosia trifida	giant ragweed	herb	FAC+	0
Angelica atropurpurea	angelica	herb	OBL	6
Anthemis cotula	dog fennel	herb	FACU	*
Apocynum cannabinum	dogbane	herb	FAC	2
Arctium minus	common burdock	herb	UPL	*
Artemisia biennis	biennial wormwood	herb	FACW-	*
Asclepias syriaca	common milkweed	herb	UPL	0
Aster pilosus	hairy aster	herb	FACU+	0
Barbarea vulgaris	winter cress	herb	FAC	*
Bidens cernua	nodding beggar's ticks	herb	OBL	2
Bidens frondosa	common beggar's ticks	herb	FACW	1
Bidens tripartita	beggar's ticks	herb	OBL	2
Bidens vulgata	tall beggar's ticks	herb	FACW	0
Brassica kaber	charlock	herb	UPL	0
Bromus inermis	awnless brome grass	herb	UPL	*
Bromus japonicus	Japanese brome	herb	FACU	*
Calystegia sepium	American bindweed	herb	FAC	1
Carduus acanthoides	acanthus bristle thistle	herb	UPL	*
Chamaesyce supina	milk spurge	herb	UPL	0
Chenopodium album	lamb's quarters	herb	FAC-	*

(continued on next page)

ROUTINE ON-SITE WETLAND DETERMINATION

Site 2 (page 4 of 7)

Field Investigators: Matthews, Kurylo, Tessene, and Feist
Date: 12 August 2002
Project Name: FAP 316
State: Illinois **County:** Stephenson **Applicant:** IDOT District 2
Site Name: Wetland enhancement
Legal Description: E/2, NW/4, Sect. 1, T 28 N, R 7 E
Location: This wetland enhancement is located south of the former West St. James Road, along the east and west sides of Richland Creek, upstream and downstream from the bridge on relocated Illinois Route 26.

SPECIES LIST (continued)

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
Cirsium arvense	Canada thistle	herb	FACU	*
Cirsium vulgare	bull thistle	herb	FACU-	*
Conyza canadensis	horseweed	herb	FAC-	0
Dactylis glomerata	orchard grass	herb	FACU	*
Daucus carota	Queen Anne's lace	herb	UPL	*
Dipsacus sylvestris	common teasel	herb	UPL	*
Echinochloa muricata	barnyard grass	herb	OBL	0
Echinocystis lobata	wild balsam-apple	herb	FACW-	4
Elymus repens	quack grass	herb	FACU	*
Elymus virginicus	Virginia wild rye	herb	FACW-	4
Epilobium coloratum	cinnamon willow herb	herb	OBL	3
Erechtites hieracifolia	fire weed	herb	FACU	2
Erigeron annuus	annual fleabane	herb	FAC-	1
Eupatorium perfoliatum	common boneset	herb	FACW+	4
Festuca arundinacea	tall fescue	herb	FACU+	*
Glechoma hederacea	ground ivy	herb	FACU	*
Glyceria grandis	American manna grass	herb	OBL	10
Helenium autumnale	autumn sneezeweed	herb	FACW+	3
Hordeum jubatum	squirrel-tail	herb	FAC+	*
Impatiens capensis	jewelweed	herb	FACW	2
Juncus dudleyi	Dudley's rush	herb	FAC	4
Lactuca serriola	prickly lettuce	herb	FAC	*
Lemna minor	common duckweed	herb	OBL	3
Lycopus americanus	common water horehound	herb	OBL	3
Melilotus alba	white sweet clover	herb	FACU	*
Melilotus officinalis	yellow sweet clover	herb	FACU	*
Mentha arvensis villosa	field mint	herb	FACW	4
Mimulus ringens	monkey flower	herb	OBL	5

(continued on next page)

ROUTINE ON-SITE WETLAND DETERMINATION

Site 2 (page 5 of 7)

Field Investigators: Matthews, Kurylo, Tessene, and Feist
Date: 12 August 2002
Project Name: FAP 316
State: Illinois **County:** Stephenson **Applicant:** IDOT District 2
Site Name: Wetland enhancement
Legal Description: E/2, NW/4, Sect. 1, T 28 N, R 7 E
Location: This wetland enhancement is located south of the former West St. James Road, along the east and west sides of Richland Creek, upstream and downstream from the bridge on relocated Illinois Route 26.

SPECIES LIST (continued)

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
Myosoton aquaticum	giant chickweed	herb	FAC+	*
Oenothera biennis	evening primrose	herb	FACU	1
Oxalis dillenii	yellow wood sorrel	herb	FACU	0
Pastinaca sativa	parsnip	herb	UPL	*
Penthorum sedoides	ditch stonecrop	herb	OBL	2
Phalaris arundinacea	reed canary grass	herb	FACW+	*
Phleum pratense	timothy	herb	FACU	*
Pilea pumila	Canada clearweed	herb	FACW	3
Plantago rugelii	red-stalked plantain	herb	FAC	0
Polygonum aviculare	knotweed	herb	FAC-	*
Polygonum hydropiper	common smartweed	herb	OBL	*
Polygonum lapathifolium	curttop lady's thumb	herb	FACW+	0
Polygonum persicaria	spotted lady's thumb	herb	FACW	*
Polygonum scandens	climbing buckwheat	herb	FAC	2
Populus deltoides	eastern cottonwood	shrub, herb	FAC+	2
Ratibida pinnata	drooping coneflower	herb	UPL	4
Rorippa islandica	marsh yellow cress	herb	OBL	4
Rosa multiflora	multiflora rose	herb	FACU	*
Rudbeckia hirta	black-eyed Susan	herb	FACU	2
Rumex altissimus	pale dock	herb	FACW-	2
Rumex crispus	curly dock	herb	FAC+	*
Salix amygdaloides	peach-leaved willow	shrub	FACW	4
Salix exigua	sandbar willow	shrub	OBL	1
Salix nigra	black willow	shrub, herb	OBL	3
Scirpus tabernaemontanii	great bulrush	herb	OBL	4
Scrophularia marilandica	late figwort	herb	FACU-	4
Scutellaria lateriflora	mad-dog skullcap	herb	OBL	4

(continued on next page)

ROUTINE ON-SITE WETLAND DETERMINATION

Site 2 (page 6 of 7)

Field Investigators: Matthews, Kurylo, Tessene, and Feist
Date: 12 August 2002
Project Name: FAP 316
State: Illinois **County:** Stephenson **Applicant:** IDOT District 2
Site Name: Wetland enhancement
Legal Description: E/2, NW/4, Sect. 1, T 28 N, R 7 E
Location: This wetland enhancement is located south of the former West St. James Road, along the east and west sides of Richland Creek, upstream and downstream from the bridge on relocated Illinois Route 26.

SPECIES LIST (continued)

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
Setaria faberi	giant foxtail	herb	FACU+	*
Setaria glauca	pigeon grass	herb	FAC	*
Silphium perfoliatum	cup plant	herb	FACW-	4
Solanum dulcamara	false bittersweet	vine	FAC	*
Solidago canadensis	Canada goldenrod	herb	FACU	1
Solidago gigantea	late goldenrod	herb	FACW	3
Sonchus asper	prickly sowthistle	herb	FAC	*
Taraxacum officinale	common dandelion	herb	FACU	*
Teucrium canadense	American germander	herb	FACW-	3
Thlaspi arvense	field penny cress	herb	UPL	*
Trifolium pratense	red clover	herb	FACU+	*
Trifolium repens	white clover	herb	FACU+	*
Typha latifolia	cattail	herb	OBL	1
Ulmus pumila	Siberian elm	herb	UPL	*
Urtica dioica	stinging nettle	herb	FAC+	2
Verbascum thapsus	woolly mullein	herb	UPL	*
Verbena hastata	blue vervain	herb	FACW+	3
Verbena urticifolia	white vervain	herb	FAC+	3
Xanthium strumarium	cocklebur	herb	FAC	0

† Coefficient of Conservatism (Taft et al. 1997)
* Non-native species

$mCv = \sum C/N = 133/62 = 2.1$
$FQI = \sum C/\sqrt{N} = 133/\sqrt{62} = 16.9$

ROUTINE ON-SITE WETLAND DETERMINATION

Site 2 (page 7 of 7)

Field Investigators: Matthews, Kurylo, Tessene, and Feist
Date: 12 August 2002
Project Name: FAP 316
State: Illinois **County:** Stephenson **Applicant:** IDOT District 2
Site Name: Wetland enhancement
Legal Description: E/2, NW/4, Sect. 1, T 28 N, R 7 E
Location: This wetland enhancement is located south of the former West St. James Road, along the east and west sides of Richland Creek, upstream and downstream from the bridge on relocated Illinois Route 26.

PLANTED SPECIES

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
Carex vulpinoidea	fox sedge	herb	OBL	3
Eleocharis obtusa	blunt spike rush	herb	OBL	2
Fraxinus pennsylvanica	green ash	sapling	FACW	2
Glyceria striata	fowl manna grass	herb	OBL	4
Juncus torreyi	Torrey's rush	herb	FACW	3
Leersia oryzoides	rice cutgrass	herb	OBL	3
Lolium perenne	crested rye grass	herb	FACU	*
Populus deltoides	eastern cottonwood	sapling	FAC+	2
Quercus bicolor	swamp white oak	sapling	FACW+	7
Scirpus atrovirens	dark green bulrush	herb	OBL	4
Spartina pectinata	freshwater cord grass	herb	FACW+	4

† Coefficient of Conservatism (Taft et al. 1997)
* Non-native species

$mCv = \sum C/N = 165/71 = 2.3$**
$FQI = \sum C/\sqrt{N} = 165/\sqrt{71} = 19.6$**

**These calculations include the complete species list above, as well as the planted species.

APPENDIX B: HYDROLOGIC INFORMATION

Figure 1: Estimated extent of 2002 wetland hydrology at Site 1 (figure prepared by ISGS, from Weaver and Carr 2002).

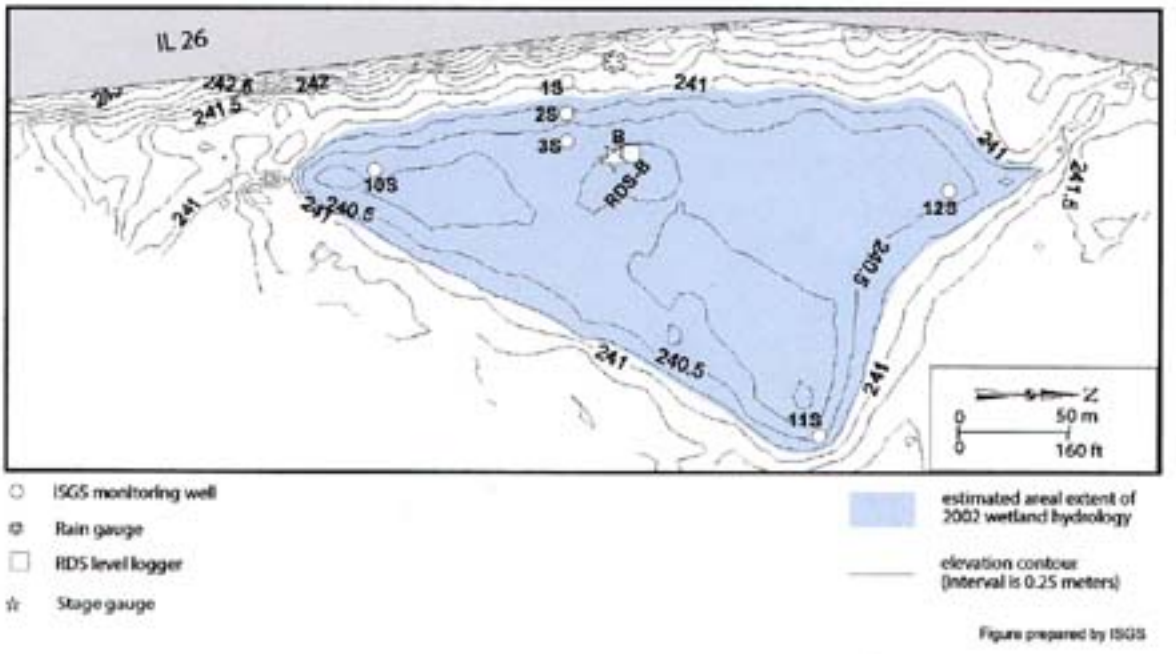


Figure 2: Estimated extent of 2002 wetland hydrology at the eastern half Site 2 (figure prepared by ISGS, from Weaver and Carr 2002).

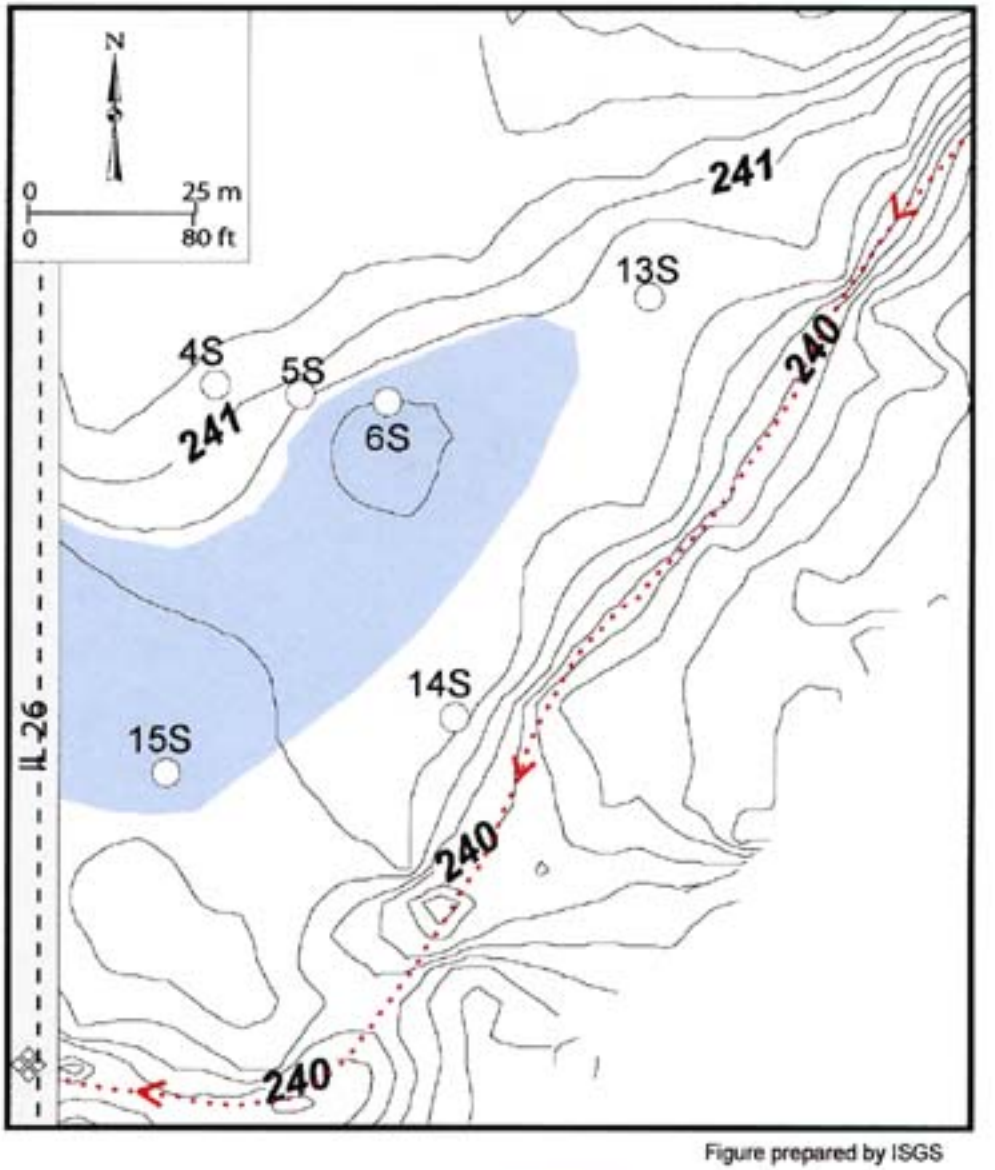
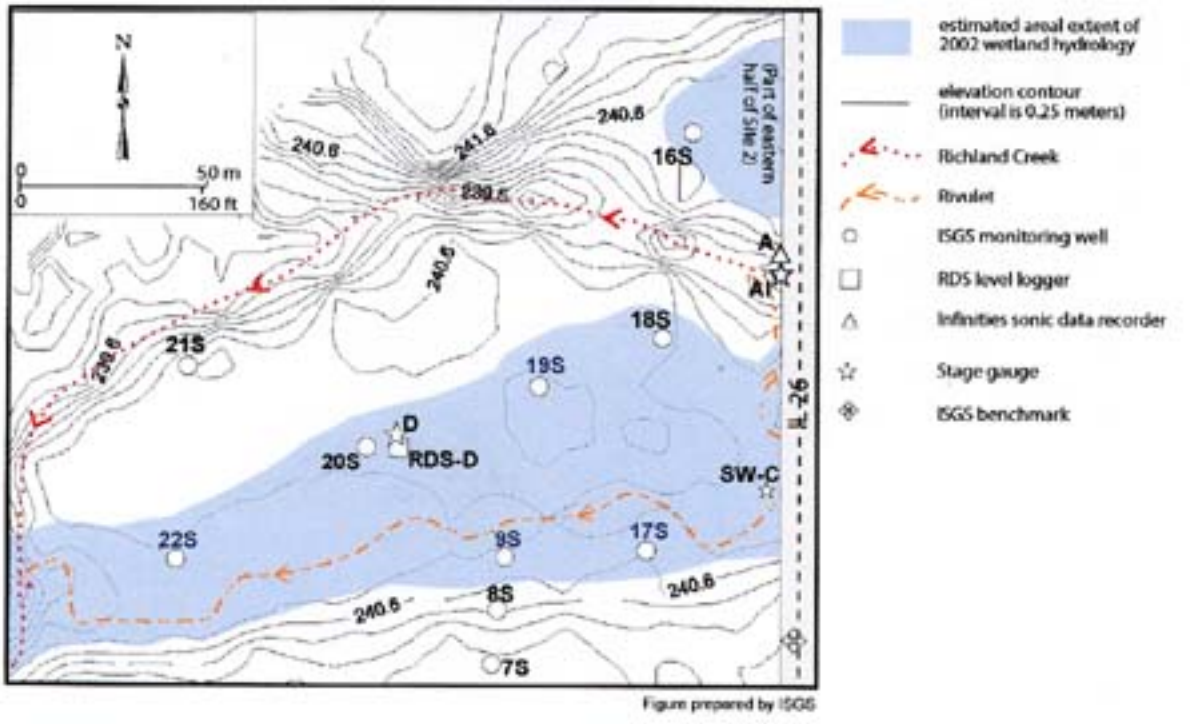


Figure 3: Estimated extent of 2002 wetland hydrology at the western half Site 2 (figure prepared by ISGS, from Weaver and Carr 2002).



APPENDIX C: RESULTS OF QUANTITATIVE VEGETATION SAMPLING

Table 1: Results of quantitative vegetation sampling at Site 1A (created marsh)

Species	Frequency (%)	Relative frequency (%)	Average cover (%)	Relative cover (%)	Importance value
Bidens cernua	81.5	12.5	31.9	18.1	15.3
Polygonum hydropiper	59.3	9.1	19.6	11.2	10.1
Phalaris arundinacea	48.1	7.4	19.8	11.2	9.3
Eleocharis obtusa	55.6	8.5	16.4	9.3	8.9
Leersia oryzoides	59.3	9.1	11.4	6.5	7.8
Alisma plantago-aquatica	37.0	5.7	15.9	9.1	7.4
Eleocharis acicularis	25.9	4.0	9.1	5.2	4.6
Polygonum persicaria	29.6	4.5	7.4	4.2	4.4
Lemna minor	25.9	4.0	7.1	4.1	4.0
Echinochloa muricata	22.2	3.4	5.0	2.9	3.1
Bidens tripartita	22.2	3.4	5.0	2.8	3.1
Trifolium hybridum	14.8	2.3	3.9	2.2	2.2
Cyperus strigosus	18.5	2.8	1.8	1.0	1.9
Epilobium coloratum	14.8	2.3	0.9	0.5	1.4
Bidens frondosa	11.1	1.7	1.7	0.9	1.3
Typha latifolia	11.1	1.7	1.7	0.9	1.3
Lindernia dubia	14.8	2.3	0.4	0.3	1.3
Salix exigua	11.1	1.7	1.2	0.7	1.2
Carex lacustris	3.7	0.6	3.1	1.8	1.2
Scirpus tabernaemontanii	7.4	1.1	1.5	0.9	1.0
Acalypha rhomboidea	11.1	1.7	0.3	0.2	0.9
Scirpus cyperinus	3.7	0.6	2.3	1.3	0.9
Carex vulpinoidea	7.4	1.1	0.7	0.4	0.8
Lycopus americanus	7.4	1.1	0.7	0.4	0.8
Eleocharis erythropoda	3.7	0.6	1.4	0.8	0.7
Sagittaria latifolia	3.7	0.6	1.4	0.8	0.7
Scirpus fluviatilis	3.7	0.6	1.4	0.8	0.7
Erigeron annuus	7.4	1.1	0.1	0.1	0.6
Bidens vulgata	3.7	0.6	0.6	0.3	0.4
Impatiens capensis	3.7	0.6	0.6	0.3	0.4
Penthorum sedoides	3.7	0.6	0.6	0.3	0.4
Salix amygdaloides	3.7	0.6	0.6	0.3	0.4
Amaranthus tuberculatus	3.7	0.6	0.1	0.1	0.3
Conyza canadensis	3.7	0.6	0.1	0.1	0.3
Polygonum pensylvanicum	3.7	0.6	0.1	0.1	0.3
Trifolium repens	3.7	0.6	0.1	0.1	0.3
Sum	652	100	176	100	100

Table 2: Results of quantitative vegetation sampling at Site 1B (wet prairie border)

Species	Frequency (%)	Relative frequency (%)	Average cover (%)	Relative cover (%)	Importance value
Phalaris arundinacea	88.9	12.1	44.4	24.0	18.1
Rudbeckia subtomentosa	72.2	9.8	11.3	6.1	8.0
Bromus inermis	33.3	4.5	15.6	8.4	6.5
Ratibida pinnata	44.4	6.1	10.4	5.6	5.8
Trifolium hybridum	44.4	6.1	10.3	5.6	5.8
Rudbeckia hirta	38.9	5.3	10.2	5.5	5.4
Elymus canadensis	27.8	3.8	11.9	6.4	5.1
Eleocharis obtusa	27.8	3.8	8.1	4.3	4.1
Bidens cernua	22.2	3.0	5.3	2.9	2.9
Polygonum hydropiper	22.2	3.0	5.2	2.8	2.9
Lolium perenne	16.7	2.3	5.0	2.7	2.5
Carex vulpinoidea	22.2	3.0	3.3	1.8	2.4
Agrostis alba	16.7	2.3	3.8	2.0	2.1
Potentilla norvegica	22.2	3.0	2.0	1.1	2.1
Sonchus asper	22.2	3.0	2.0	1.1	2.1
Cirsium vulgare	11.1	1.5	4.3	2.3	1.9
Acalypha rhomboidea	11.1	1.5	2.9	1.6	1.5
Bidens frondosa	11.1	1.5	2.9	1.6	1.5
Lycopus americanus	11.1	1.5	2.9	1.6	1.5
Phleum pratense	11.1	1.5	2.9	1.6	1.5
Aster novae-angliae	16.7	2.3	1.2	0.6	1.5
Bidens vulgata	11.1	1.5	2.3	1.2	1.4
Silphium perfoliatum	11.1	1.5	1.7	0.9	1.2
Ulmus rubra	11.1	1.5	1.7	0.9	1.2
Salix nigra	5.6	0.8	2.1	1.1	0.9
Coreopsis tinctoria	11.1	1.5	0.3	0.2	0.8
Aster pilosus	5.6	0.8	0.8	0.4	0.6
Bidens tripartita	5.6	0.8	0.8	0.4	0.6
Cyperus strigosus	5.6	0.8	0.8	0.4	0.6
Echinochloa muricata	5.6	0.8	0.8	0.4	0.6
Elymus repens	5.6	0.8	0.8	0.4	0.6
Epilbium coloratum	5.6	0.8	0.8	0.4	0.6
Helenium autumnale	5.6	0.8	0.8	0.4	0.6
Helianthus annuus	5.6	0.8	0.8	0.4	0.6
Monarda punctata	5.6	0.8	0.8	0.4	0.6
Penthorum sedoides	5.6	0.8	0.8	0.4	0.6
Solidago rigida	5.6	0.8	0.8	0.4	0.6
Trifolium repens	5.6	0.8	0.8	0.4	0.6
Vernonia fasciculata	5.6	0.8	0.8	0.4	0.6
Acer saccharinum	5.6	0.8	0.2	0.1	0.4
Aster laevis	5.6	0.8	0.2	0.1	0.4
Populus deltoides	5.6	0.8	0.2	0.1	0.4
Sum	733	100	185	100	100

Table 3: Results of quantitative vegetation sampling at Site 2 (wetland enhancement)

Species	Frequency (%)	Relative frequency (%)	Average cover (%)	Relative cover (%)	Importance value
Lolium perenne	73.3	12.4	50.0	27.3	19.9
Agrostis alba	33.3	5.6	15.5	8.5	7.1
Leersia oryzoides	33.3	5.6	11.9	6.5	6.1
Phalaris arundinacea	23.3	4.0	12.4	6.8	5.4
Polygonum lapathifolium	23.3	4.0	7.3	4.0	4.0
Epilobium coloratum	23.3	4.0	5.4	3.0	3.5
Taraxacum officinale	23.3	4.0	4.6	2.5	3.2
Rumex crispus	16.7	2.8	5.6	3.0	2.9
Bidens cernua	20.0	3.4	4.5	2.5	2.9
Scirpus atrovirens	20.0	3.4	4.5	2.5	2.9
Bidens tripartita	20.0	3.4	3.7	2.0	2.7
Polygonum pensylvanicum	16.7	2.8	3.2	1.7	2.3
Lactuca serriola	10.0	1.7	3.8	2.1	1.9
Salix nigra	10.0	1.7	3.8	2.1	1.9
Bidens vulgata	10.0	1.7	3.4	1.9	1.8
Phleum pratense	13.3	2.3	2.4	1.3	1.8
Urtica dioica	13.3	2.3	2.4	1.3	1.8
Glechoma hederacea	6.7	1.1	4.1	2.2	1.7
Erigeron annuus	10.0	1.7	2.3	1.2	1.5
Impatiens capensis	10.0	1.7	2.3	1.2	1.5
Bidens frondosa	13.3	2.3	1.2	0.7	1.5
Echinochloa muricata	13.3	2.3	1.2	0.7	1.5
Bromus inermis	6.7	1.1	2.9	1.6	1.4
Potentilla norvegica	10.0	1.7	1.9	1.0	1.4
Acer negundo	13.3	2.3	0.8	0.4	1.3
Carex vulpinoidea	10.0	1.7	1.5	0.8	1.3
Polygonum persicaria	10.0	1.7	1.5	0.8	1.3
Lycopus americanus	6.7	1.1	2.5	1.4	1.2
Myosoton aquaticum	10.0	1.7	1.5	0.8	1.2
Verbena hastata	3.3	0.6	2.1	1.1	0.9
Apocynum cannabinum	6.7	1.1	1.0	0.5	0.8
Juncus dudleyi	6.7	1.1	1.0	0.5	0.8
Solidago gigantea	6.7	1.1	1.0	0.5	0.8
Cirsium vulgare	6.7	1.1	0.6	0.3	0.7
Polygonum hydropiper	6.7	1.1	0.6	0.3	0.7
Trifolium repens	6.7	1.1	0.6	0.3	0.7
Angelica atropurpurea	3.3	0.6	1.3	0.7	0.6
Bromus japonicus	3.3	0.6	1.3	0.7	0.6
Calestegia sepium	3.3	0.6	1.3	0.7	0.6
Polygonum aviculare	3.3	0.6	1.3	0.7	0.6
Chenopodium album	3.3	0.6	0.5	0.3	0.4
Elymus virginicus	3.3	0.6	0.5	0.3	0.4

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Table 3 continued

Species	Frequency (%)	Relative frequency (%)	Average cover (%)	Relative cover (%)	Importance value
Festuca arundinacea	3.3	0.6	0.5	0.3	0.4
Glyceria striata	3.3	0.6	0.5	0.3	0.4
Juncus torreyi	3.3	0.6	0.5	0.3	0.4
Scutellaria lateriflora	3.3	0.6	0.5	0.3	0.4
Amaranthus tuberculatus	3.3	0.6	0.1	0.1	0.3
Conyza canadensis	3.3	0.6	0.1	0.1	0.3
Mimulus ringens	3.3	0.6	0.1	0.1	0.3
Sum	590	100	183	100	100

APPENDIX D: PHOTOGRAPHS OF WETLAND MITIGATION SITES

PHOTOGRAPH LEGENDS

Figure 1: View of Site 1 to the north.

Figure 2: View of Site 1 to the south.

Figure 3: View of Site 1 to the west.

Figure 4: View of Site 1 to the east.

Figure 5: View of Site 2 to the northeast from the northwest end of the bridge over Richland Creek.

Figure 6: View of Site 2 to the southeast from the northwest end of the bridge over Richland Creek.

Figure 7: View of Site 2 to the northwest from the southeast end of the bridge over Richland Creek.


Figure 1


Figure 2


Figure 3


Figure 4


Figure 5


Figure 6


Figure 7